ECOsystem Spaceborne Thermal Radiometer Experiment on Space Station

Mission and Science Data System

Science Team Meeting
May 15, 2017

Eugene Chu, Dana Freeborn, Laura Jewell, Hyun Lee, Tom Logan, Al Niessner, Mike Smyth, Cynthia Wong, Ben Bornstein

Jet Propulsion Laboratory, California Institute of Technology

Mission System Overview

Mission Operations

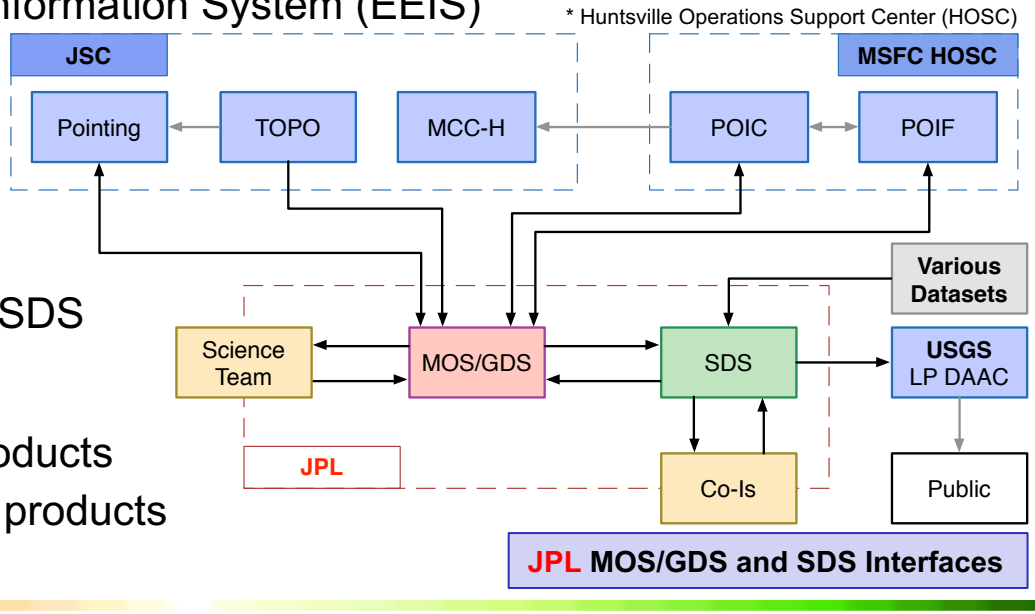
- Monitor and operate ECOSTRESS during Integration and Test (I&T), In-Orbit Checkout (IOC), and Nominal Operations
- Science observations will be planned and uplinked weekly
  - Time-based data collection planned based on ISS Trajectory Operations Office (TOPO)/Attitude and Pointing Office data.
  - Downlink planned based on schedule from ISS Data Management Coordinator.
- Responsible for the End-to-End Information System (EEIS)

Ground Data System

- Command/Telemetry processing
- Sequence validation
- Manage HOSC* software tools
- Data delivery to subsystems and SDS

Science Data System

- Create L0, L1, and L2 science products
- Catalog and store L0–L4 science products
- Data delivery to USGS LP DAAC



© 2017 California Institute of Technology. Government sponsorship acknowledged

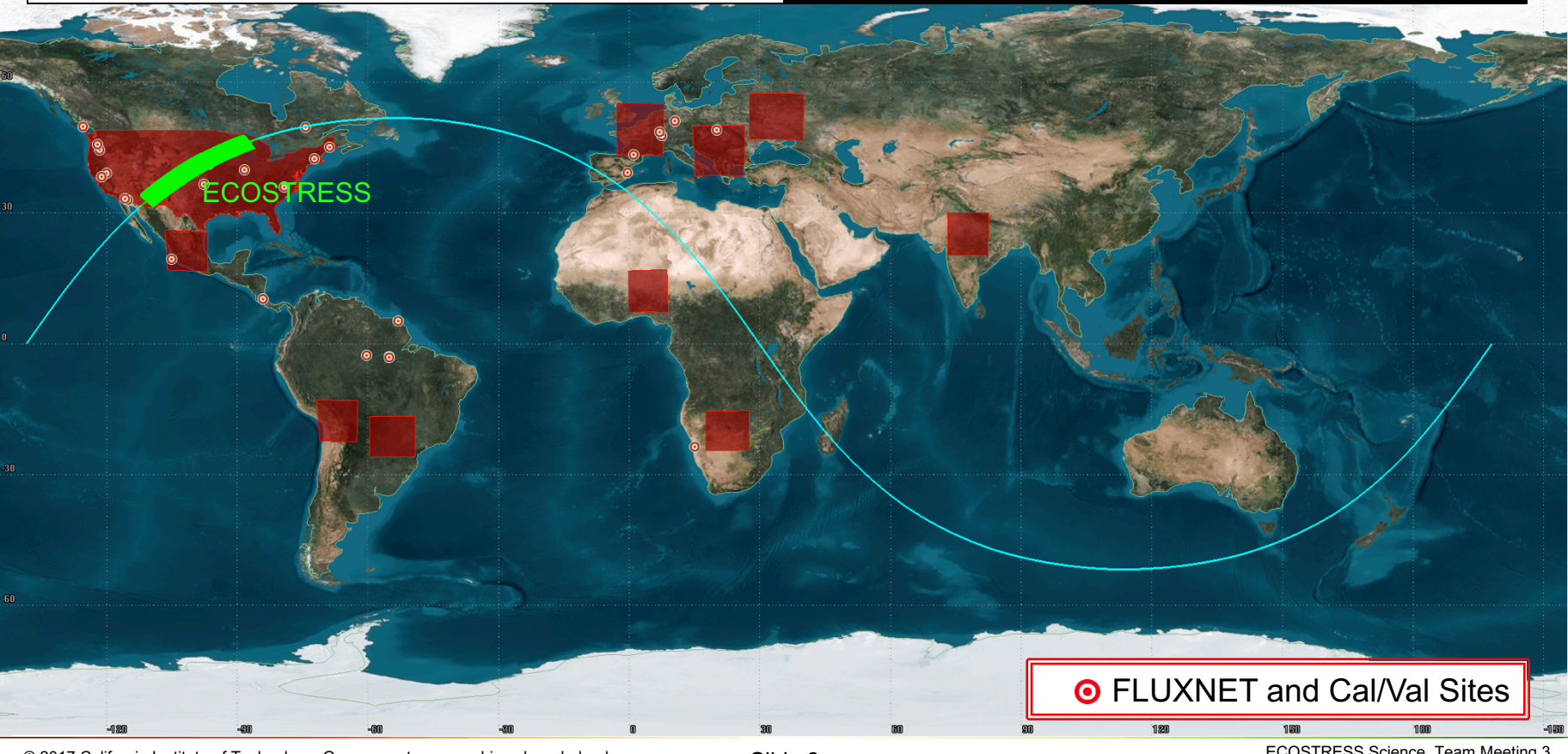
Orbit in Life

Dayside

- SCANNING
- SCIENCE

Eclipse

- SCANNING
- SCIENCE (Cal/Val sites, ~90 total over mission)



© 2017 California Institute of Technology. Government sponsorship acknowledged

Data Product Volumes

Product	Format	Avg. Daily Files	Volume Scene (MB)	Volume Daily (GB)	Volume Mission (TB)*
Level 0 Telemetry and Raw Instrument	HDF5	336	853	70	26
Level 1A	HDF5 + ECS** metadata	366	908	75	28
Level 1B Science and Calibration	HDF5 + ECS metadata	504	2,079	171	96
Level 2 ST&E + Cloud Mask	HDF5 + ECS metadata	336	1,140	94	52
Level 3 ET (PT-JPL + ALEXI)	HDF5 + ECS metadata	336	1,341	110	62
Level 4 WUE, ESI	HDF5 + ECS metadata	504	604	50	28
	Total	**2,382**	**6,925**	**568**	**292**

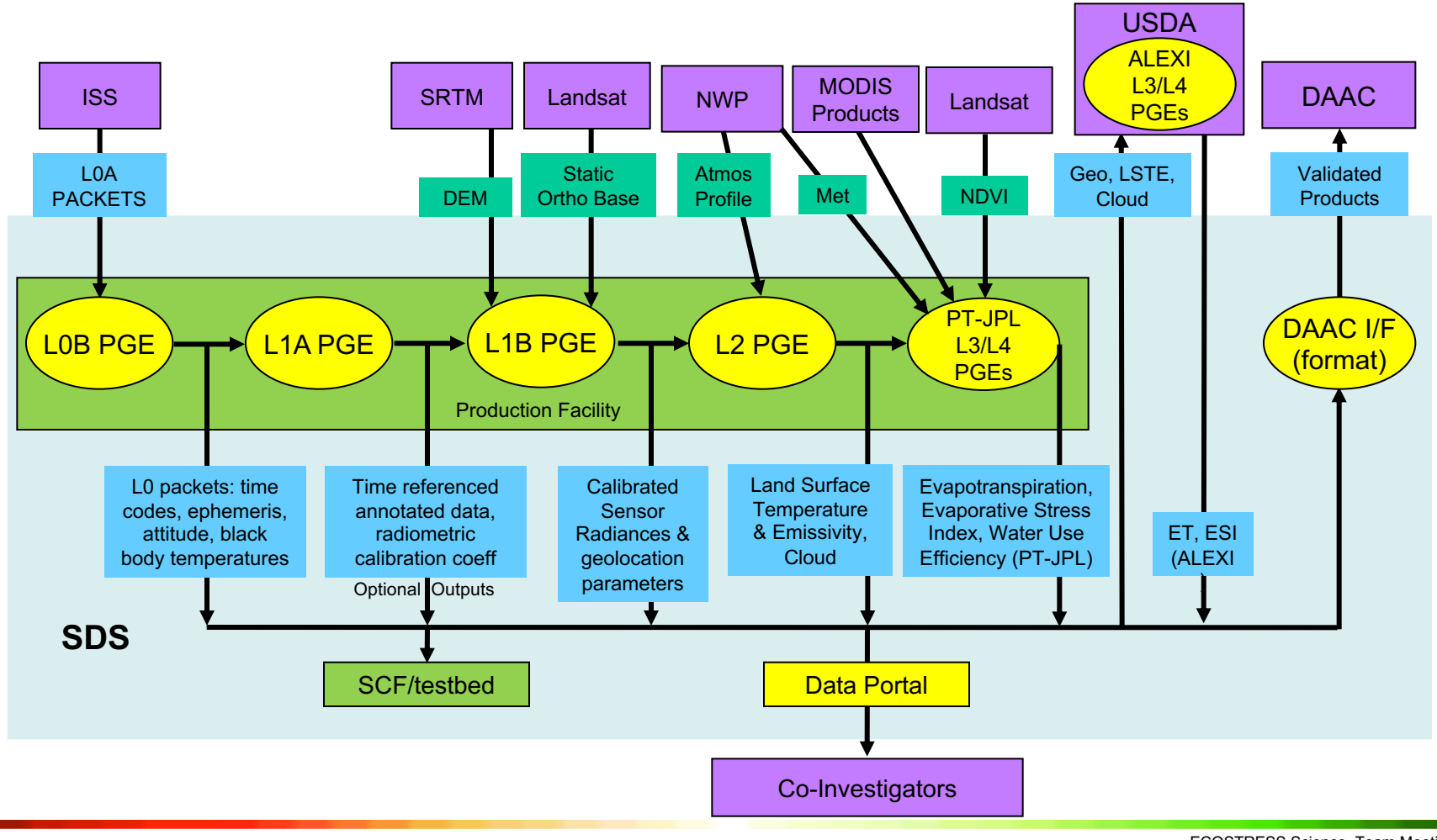
* Mission volume totals include one reprocessing, starting six months before end of mission.
** EOSDIS Core System (ECS) Metadata

ECOSTRESS Scenes (400x400 km) Daily Average / Maximum: 74 / 145

For additional details, see ECOSTRESS Science Data Management and Archive Plan (SDMAP)

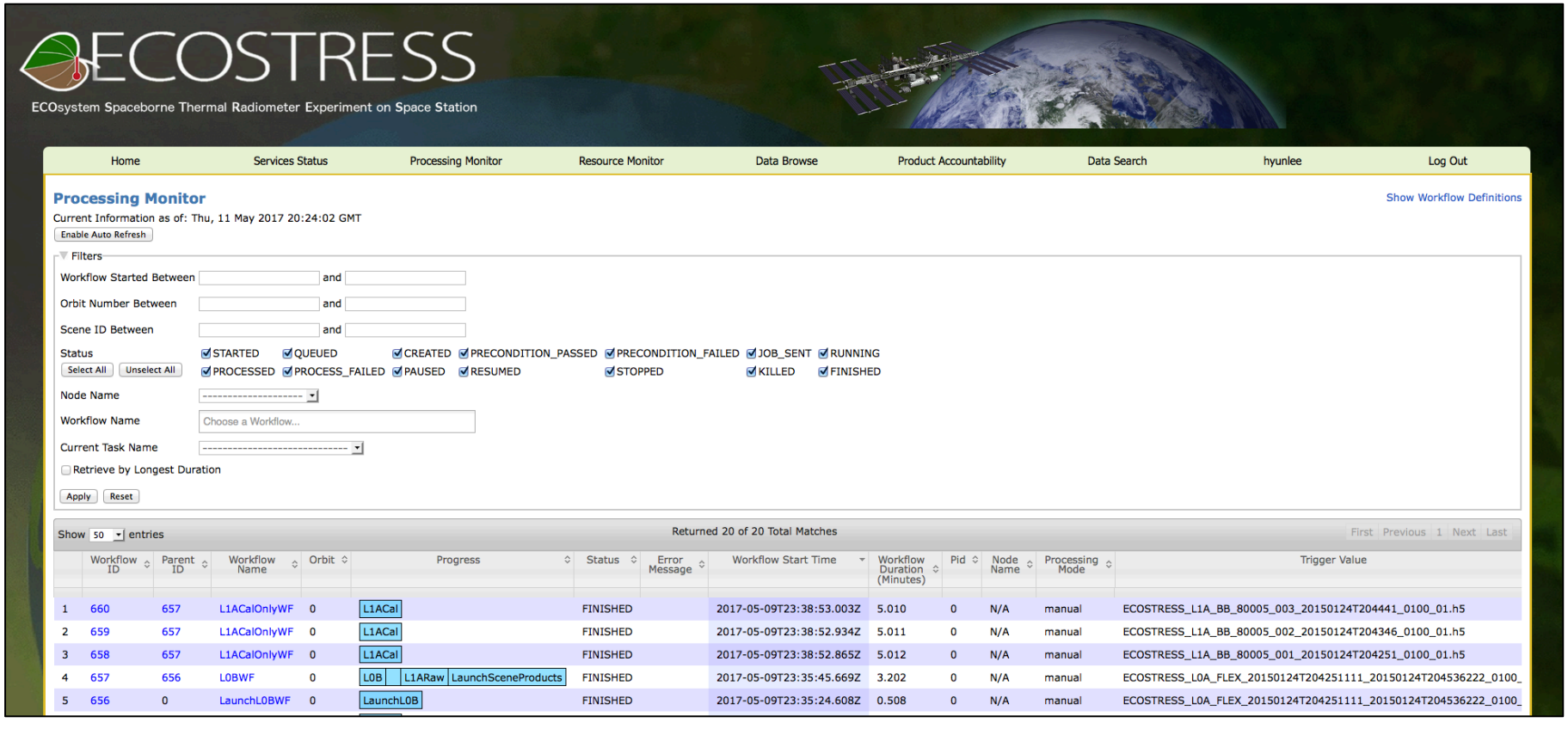
© 2017 California Institute of Technology. Government sponsorship acknowledged

SDS High Level Processing Data Flow



© 2017 California Institute of Technology. Government sponsorship acknowledged

ECOSTRESS Co-I Portal (1/4)
Process Monitoring



	Workflow ID	Parent ID	Workflow Name	Orbit	Progress	Status	Error Message	Workflow Start Time	Workflow Duration (Minutes)	Pid	Node Name	Processing Mode	Trigger Value
1	660	657	L1ACalOnlyWF	0	L1ACal	FINISHED		2017-05-09T23:38:53.003Z	5.010	0	N/A	manual	ECOSTRESS_L1A_BB_80005_003_20150124T204441_0100_01.h5
2	659	657	L1ACalOnlyWF	0	L1ACal	FINISHED		2017-05-09T23:38:52.934Z	5.011	0	N/A	manual	ECOSTRESS_L1A_BB_80005_002_20150124T204346_0100_01.h5
3	658	657	L1ACalOnlyWF	0	L1ACal	FINISHED		2017-05-09T23:38:52.865Z	5.012	0	N/A	manual	ECOSTRESS_L1A_BB_80005_001_20150124T204251_0100_01.h5
4	657	656	L0BWF	0	L0B L1ARaw LaunchSceneProducts	FINISHED		2017-05-09T23:35:45.669Z	3.202	0	N/A	manual	ECOSTRESS_L0A_FLEX_20150124T204251111_20150124T204536222_0100_
5	656	0	LaunchL0BWF	0	LaunchL0B	FINISHED		2017-05-09T23:35:24.608Z	0.508	0	N/A	manual	ECOSTRESS_L0A_FLEX_20150124T204251111_20150124T204536222_0100_

© 2017 California Institute of Technology. Government sponsorship acknowledged

ECOSTRESS Co-I Portal (2/4)
Data Browse

Home | Services Status | Processing Monitor | Resource Monitor | Data Browse | Product Accountability | Data Search | hyunlee | Log Out

Data Browse

Show Product Types

Information generated as of: Thu, 11 May 2017 20:27:38 GMT

Incoming Data | Output Data | All Data

Product Type

Apply | Reset | Download

Show 50 entries — Returned 26 of 26 Total Matches — First Previous 1 Next Last

		Product Type	Product Name	Product Received Time	Transfer Status	Workflow ID
1		L1A_RAW_PIX	L1A_RAW_PIX_80005_003_20150124T204441_0100_01.h5	2017-05-09T23:38:12.668Z	RECEIVED	657
2		L1A_RAW_PIX	L1A_RAW_PIX_80005_002_20150124T204346_0100_01.h5	2017-05-09T23:38:04.713Z	RECEIVED	657
3		L1A_RAW_PIX	L1A_RAW_PIX_80005_001_20150124T204251_0100_01.h5	2017-05-09T23:37:56.675Z	RECEIVED	657
4		L1A_RAW_ATT	L1A_RAW_ATT_80005_20150124T204251_0100_01.h5	2017-05-09T23:38:20.670Z	RECEIVED	657
5		L1A_RAD_GAIN	L1A_RAD_GAIN_80005_003_20150124T204441_0100_01.h5	2017-05-09T23:42:18.726Z	RECEIVED	660
6		L1A_RAD_GAIN	L1A_RAD_GAIN_80005_002_20150124T204346_0100_01.h5	2017-05-09T23:42:19.105Z	RECEIVED	659
7		L1A_RAD_GAIN	L1A_RAD_GAIN_80005_001_20150124T204251_0100_01.h5	2017-05-09T23:42:15.714Z	RECEIVED	658
8		L0B	L0B_80005_20150124T204251_0100_01.h5	2017-05-09T23:36:15.253Z	RECEIVED	657
9		SceneFile	ECOSTRESS_Scene_20150124_024252-20150124_024545.txt	2016-11-01T17:23:52.419Z	RECEIVED	N/A
10		OrbitFile	ECOSTRESS_Orbit_20151027_000001-20151116_235945.txt	2016-10-11T19:41:52.328Z	RECEIVED	N/A
11		OrbitFile	ECOSTRESS_Orbit_20150124T204251_20150124T204536.txt	2016-11-07T21:34:59.515Z	RECEIVED	N/A
12		OrbitFile	ECOSTRESS_Orbit_20150124T024100_20150124T130000.txt	2016-11-02T21:09:12.626Z	RECEIVED	N/A
13		RunConfig	ECOSTRESS_L1A_RAW_PGE_RunConfig_20170509T233709242.xml	2017-05-09T23:38:20.579Z	RECEIVED	N/A
14		L1A_PIX	ECOSTRESS_L1A_PIX_80005_003_20150124T204441_0100_01.h5	2017-05-09T23:42:04.958Z	RECEIVED	660
15		L1A_PIX	ECOSTRESS_L1A_PIX_80005_002_20150124T204346_0100_01.h5	2017-05-09T23:42:04.670Z	RECEIVED	659
16		L1A_PIX	ECOSTRESS_L1A_PIX_80005_001_20150124T204251_0100_01.h5	2017-05-09T23:42:00.334Z	RECEIVED	658
17		L1A_ENG	ECOSTRESS_L1A_ENG_80005_20150124T204251_0100_01.h5	2017-05-09T23:37:56.268Z	RECEIVED	657
18		RunConfig	ECOSTRESS_L1A_CAL_PGE_RunConfig_20170509T233859653.xml	2017-05-09T23:43:07.966Z	RECEIVED	N/A
19		RunConfig	ECOSTRESS_L1A_CAL_PGE_RunConfig_20170509T233857378.xml	2017-05-09T23:43:07.575Z	RECEIVED	N/A
20		RunConfig	ECOSTRESS_L1A_CAL_PGE_RunConfig_20170509T233855498.xml	2017-05-09T23:43:06.139Z	RECEIVED	N/A
21		L1A_BB	ECOSTRESS_L1A_BB_80005_003_20150124T204441_0100_01.h5	2017-05-09T23:38:12.542Z	RECEIVED	657
22		L1A_BB	ECOSTRESS_L1A_BB_80005_002_20150124T204346_0100_01.h5	2017-05-09T23:38:04.584Z	RECEIVED	657
23		L1A_BB	ECOSTRESS_L1A_BB_80005_001_20150124T204251_0100_01.h5	2017-05-09T23:37:56.536Z	RECEIVED	657
24		RunConfig	ECOSTRESS_L0B_PGE_RunConfig_20170509T233547312.xml	2017-05-09T23:36:54.067Z	RECEIVED	N/A
25		L0A_HK	ECOSTRESS_L0A_HK_20150124T204251111_20150124T204536222_0100_01.h5	2017-01-24T22:08:54.427Z	RECEIVED	N/A
26		L0A_FLEX	ECOSTRESS_L0A_FLEX_20150124T204251111_20150124T204536222_0100_01.h5	2017-03-01T23:15:37.135Z	RECEIVED	N/A

Show 50 entries — Returned 26 of 26 Total Matches — First Previous 1 Next Last

© 2017 California Institute of Technology. Government sponsorship acknowledged

ECOSTRESS Co-I Portal (3/4)
Product Accountability

Product Accountability

Current Information as of: Thu, 11 May 2017 20:28:17 GMT

Enable Auto Refresh

Scene Products | Orbit Products

Last Modified Date Time: Today | Yesterday | This Month | Last Month | or between _____ and _____

OR

Orbit Number Between _____ and _____

Apply | Reset

Show 50 entries — Returned 3 of 3 Total Matches — First Previous 1 Next Last

	Scene ID	Orbit Number	Last Modified	L1ABB	L1ARAWPIX	L1APIX	L1BRAD	L1BGEO	L1BATT	L2CLOUD	L2LSTE	Scene Start Date Time	Scene Stop Date Time
1	1	80005	2017-05-09T23:43:44.000Z	2066	2067	2074						2015-01-24T02:42:52.000Z	2015-01-24T02:43:45.000Z
2	2	80005	2017-05-09T23:43:44.000Z	2068	2069	2075						2015-01-24T02:43:45.000Z	2015-01-24T02:44:38.000Z
3	3	80005	2017-05-09T23:43:44.000Z	2070	2071	2076						2015-01-24T02:44:38.000Z	2015-01-24T02:45:45.000Z

Show 50 entries — Returned 3 of 3 Total Matches — First Previous 1 Next Last

R = Running, F = Failed

Product Accountability

Current Information as of: Thu, 11 May 2017 20:28:54 GMT

Enable Auto Refresh

Scene Products | Orbit Products

Last Modified Date Time: Today | Yesterday | This Month | Last Month | or between _____ and _____ Apply Reset

Show 50 entries — Returned 1 of 1 Total Matches — First Previous 1 Next Last

	Orbit Number	Last Modified	L0B	L1AENG	L1ARAWATT	Orbit Start Date Time	Orbit Stop Date Time
1	80005	2017-05-09T23:43:44.000Z	2063	2065	2073	2015-01-24T20:42:51.000Z	2015-01-24T20:45:36.000Z

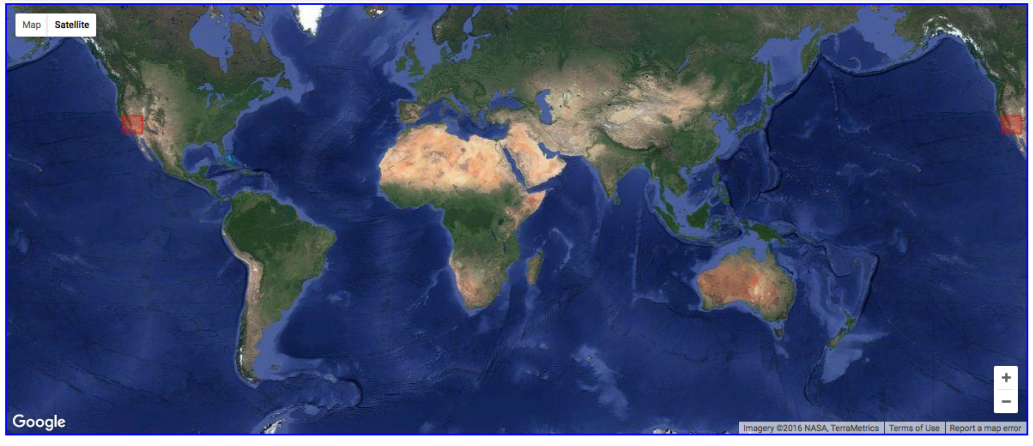
Show 50 entries — Returned 1 of 1 Total Matches — First Previous 1 Next Last

R = Running, F = Failed

© 2017 California Institute of Technology. Government sponsorship acknowledged

ECOSTRESS Co-I Portal (4/4)
Spatial Search

Spatial Search (Hold Shift to draw bounding box)



Product Type

Start Date and Stop Date

Latitude Between 33 and 39

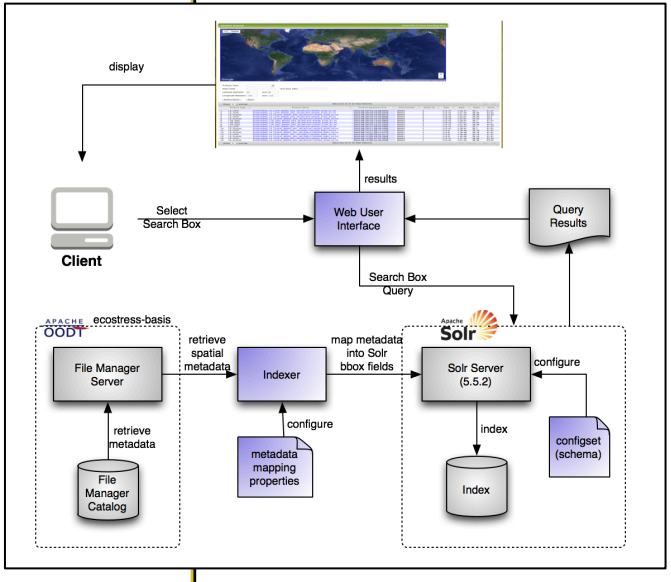
Longitude Between -122 and -114

Perform Search Reset

Show 25 entries — Returned 16 of 16 Total Matches — First Previous 1 Next Last

	Product Type	Product Name	Product Received Time	Orbit Number	Scene ID	East	West	North	South
1	L2_LSTE	ECOSTRESS_L2_LSTE_80005_002_20150124T144345_0100_01.h5	2016-08-23T19:16:08.845Z	80005	2	-112.47	-118.47	36.1	31.07
2	L2_LSTE	ECOSTRESS_L2_LSTE_80005_002_20150124T144345_0100_01.h5	2016-08-23T19:16:05.643Z	80005	2	-115.31	-121.45	38.36	33.32
3	L2_CLOUD	ECOSTRESS_L2_CLOUD_80005_002_20150124T144345_0100_01.h5	2016-08-23T19:16:00.861Z	80005	2	-115.31	-121.45	38.36	33.32
4	L2_LSTE	ECOSTRESS_L2_LSTE_80005_002_20150124T144345_0100_03.h5	2016-08-23T19:15:50.846Z	80005	2	-118.33	-124.61	40.53	35.5
5	L2_CLOUD	ECOSTRESS_L2_CLOUD_80005_002_20150124T144345_0100_03.h5	2016-08-23T19:15:45.803Z	80005	2	-118.33	-124.61	40.53	35.5
6	L1B_GEO	ECOSTRESS_L1B_GEO_80005_003_20150124T144438_0100_01.h5	2016-08-23T19:13:03.583Z	80005	3	-112.47	-118.47	36.1	31.07
7	L1B_GEO	ECOSTRESS_L1B_GEO_80005_001_20150124T144252_0100_01.h5	2016-08-23T19:12:42.292Z	80005	1	-118.33	-124.61	40.53	35.5
8	L1B_GEO	ECOSTRESS_L1B_GEO_80005_002_20150124T144345_0100_01.h5	2016-08-23T19:12:21.022Z	80005	2	-115.31	-121.45	38.36	33.32
9	L2_LSTE	ECOSTRESS_L2_LSTE_80005_001_20150124T144252_0100_02.h5	2016-08-23T17:58:50.098Z	80005	1	-112.47	-118.47	36.1	31.07
10	L2_CLOUD	ECOSTRESS_L2_CLOUD_80005_001_20150124T144252_0100_02.h5	2016-08-23T17:58:49.426Z	80005	1	-112.47	-118.47	36.1	31.07
11	L2_LSTE	ECOSTRESS_L2_LSTE_80001_001_20120811T203500_0001_02.h5	2016-08-17T17:58:17.713Z	80001	1	-112.8	-118.48	36.16	31.97
12	L2_CLOUD	ECOSTRESS_L2_CLOUD_80001_001_20120811T203500_0001_02.h5	2016-08-17T17:58:17.077Z	80001	1	-112.8	-118.48	36.16	31.97
13	L2_LSTE	ECOSTRESS_L2_LSTE_80001_001_20120811T203500_0001_01.h5	2016-08-17T00:29:22.911Z	80001	1	-112.8	-118.48	36.16	31.97
14	L2_CLOUD	ECOSTRESS_L2_CLOUD_80001_001_20120811T203500_0001_01.h5	2016-08-17T00:29:22.326Z	80001	1	-112.8	-118.48	36.16	31.97
15	L2_LSTE	ECOSTRESS_L2_LSTE_80005_001_20150124T144252_0100_01.h5	2016-08-17T00:21:57.491Z	80005	1	-115.31	-121.45	38.36	33.32
16	L2_CLOUD	ECOSTRESS_L2_CLOUD_80005_001_20150124T144252_0100_01.h5	2016-08-17T00:21:56.943Z	80005	1	-115.31	-121.45	38.36	33.32

Show 25 entries — Returned 16 of 16 Total Matches — First Previous 1 Next Last



Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not constitute or imply its endorsement by the United States Government or the Jet Propulsion Laboratory, California Institute of Technology.

© 2017 California Institute of Technology. Government sponsorship acknowledged

Backup

© 2017 California Institute of Technology. Government sponsorship acknowledged

ECOSTRESS Product Summary

Product	Dimensions (cross x along x bands)			Size (MB)	Filename (ECOSTRESS_<ORBIT>_<SCENE>_<SCENETIME>_<BUILD>_<VER>.h5)
L0A_FLEX	87	44	98,590	836	L0A_FLEX_YYYYMMDDThhmmss_YYYYMMDDThhmmss_BBbb_VV.h5
L0A_HK	87	44	2,048	17	L0A_HK_YYYYMMDDThhmmssmmm_YYYYMMDDThhmmssmmm_BBbb_VV.h5
L1A_ENG				84	L1A_ENG_OOOOO_YYYYMMDDThhmmss_BBbb_VV.h5
L1A_BB	128	11,264	6	19	L1A_BB_OOOOO_SSS_YYYYMMDDThhmmss_BBbb_VV.h5
L1A_PIX	5,402	11,264	6	805	L1A_PIX_OOOOO_SSS_YYYYMMDDThhmmss_BBbb_VV.h5l
L1B_RAD	5,400	5,632	11	738	L1B_RAD_OOOOO_SSS_YYYYMMDDThhmmss_BBbb_VV.h5
L1B_GEO	5,400	5,632	12	1341	L1B_GEO_OOOOO_SSS_YYYYMMDDThhmmss_BBbb_VV.h5
L1B_ATT	15	52	2	<<1	L1B_ATT_OOOOO_SSS_YYYYMMDDThhmmss_BBbb_VV.h5
L2_LSTE	5,400	5,632	16	1073	L2_LSTE_OOOOO_SSS_YYYYMMDDThhmmss_BBbb_VV.h5
L2_CLOUD	5,400	5,632	1	67	L2_CLOUD_OOOOO_SSS_YYYYMMDDThhmmss_BBbb_VV.h5
L3_ET_PT-JPL	5,400	5,632	10	671	L3_ET_PT-JPL_OOOOO_SSS_YYYYMMDDThhmmss_BBbb_VV.h5
L3_ET_ALEXI	5,400	5,632	10	671	L3_ET_ALEXI_OOOOO_SSS_YYYYMMDDThhmmss_BBbb_VV.h5
L4_ESI_PT-JPL	5,400	5,632	3	201	L4_ESI_PT-JPL_OOOOO_SSS_YYYYMMDDThhmmss_BBbb_VV.h5
L4_ESI_ALEXI	5,400	5,632	3	201	L4_ESI_ALEXI_OOOOO_SSS_YYYYMMDDThhmmss_BBbb_VV.h5
L4_WUE	5,400	5,632	3	201	L4_WUE_OOOOO_SSS_YYYYMMDDThhmmss_BBbb_VV.h5

© 2017 California Institute of Technology. Government sponsorship acknowledged

ECOSTRESS ECS Product Metadata (1/3)

Field	Shape	Repetition	Type	Units	Comments
AncillaryDataDescriptors	Array	Unbounded	String	N/A	Config Files and SFIF
AutomaticQualityFlag	Scalar	1	String	N/A	Set by PGE
BuildId	Scalar	1	String	N/A	Set in Global Constant
CollectionLabel	Scalar	1	String	N/A	Configuration File
DataFormatType	Scalar	1	String	N/A	Static File Identification File (SFIF)
GranuleName	Scalar	1	String	N/A	Determined by PGE
HDFVersionId	Scalar	1	String	N/A	SFIF
InputPointer	Array	5	String	N/A	Configuration File
InstrumentShortName	Scalar	1	String	N/A	SFIF
ProductTypeLongName	Scalar	1	String	N/A	SFIF
PlatformLongName	Scalar	1	String	N/A	SFIF
PlatformShortName	Scalar	1	String	N/A	SFIF

© 2017 California Institute of Technology. Government sponsorship acknowledged

ECOSTRESS ECS Product Metadata (2/3)

Field	Shape	Repetition	Type	Units	Comments
PlatformType	Scalar	1	String	N/A	Set by PGE
ProcessingLevel	Scalar	1	String	N/A	Set by PGE
ProducerAgency	Scalar	1	String	N/A	Funding Agency, i.e. “NASA”
ProducerInstitution	Scalar	1	String	N/A	e.g. “JPL”, “USDA”, …
ProductionDateTime	Scalar	1	String	N/A	Creation Date/Time
ProductionLocation	Scalar	1	String	N/A	Production Facility
ProjectId	Scalar	1	String	N/A	SFIF
RangeBeginningDate	Scalar	1	String	N/A	Earliest Product Date
RangeBeginningTime	Scalar	1	String	N/A	Earliest Product Time
RangeEndingDate	Scalar	1	String	N/A	Latest Product Date
RangeEndingTime	Scalar	1	String	N/A	Latest Product Time
ShortName	Scalar	1	String	N/A	Granule Short Name

© 2017 California Institute of Technology. Government sponsorship acknowledged

ECOSTRESS ECS Product Metadata (3/3)

Field	Shape	Repetition	Type	Units	Comments
SISName	Scalar	1	String	N/A	Software Interface Specification (SIS) Document Name
SISVersion	Scalar	1	String	N/A	SIS Version
StartOrbitNumber	Scalar	1	Int32	N/A	
StopOrbitNumber	Scalar	1	Int32	N/A	
StartLongitude	Scalar	1	Float32	Degrees	
EndLongitude	Scalar	1	Float32	Degrees	
StartLatitude	Scalar	1	Float32	Degrees	
EndLatitude	Scalar	1	Float32	Degrees	
SceneID	Scalar	1	String	N/A	

© 2017 California Institute of Technology. Government sponsorship acknowledged